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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/709,752	05/26/2004	Kohichi Ohsumi	JP920030018US1	3751

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INTERNATIONAL BUSINESS MACHINES CORPORATION
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HOPEWELL JUNCTION, NY 12533

EXAMINER

CHANG, RICK KILTAE

ART UNIT	PAPER NUMBER
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3726

MAIL DATE	DELIVERY MODE
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10/02/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/709,752	OHSUMI ET AL.	
	Examiner	Art Unit	
	Rick K. Chang	3726	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 June 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 5-6 rejected under 35 U.S.C. 102(b) as being anticipated by Larson (US 5,160,579).

Re claims 1, 5: Larson discloses preparing an insulating substrate (10) having a front surface and a back surface, and a layer of metal foil formed on each of said front surface and said back surface; forming an opening (a through hole in Fig. 1A) in a metal foil of one of said metal foils and said insulating substrate; forming a first resist pattern (16) on said metal foil; forming a plating layer (18) on an inner surface of said opening and areas of said metal foil not covered by said first resist pattern; adjusting a thickness of said plating layer on said metal foil (col. 4, line 52); and forming areas of said metal foil not covered by said plating layer into lines, said metal foil having at least one area covered by said plating layer (Fig. 1J).

Re claim 6: Larson discloses removing said first resist pattern (16 removed in Fig. 1I); forming a second resist pattern (20,22) on said areas of said metal foil; selectively forming an exposed portion of said areas of said metal foil using said second resist pattern (Fig. 1I); etching said metal foil at said exposed portion (12,14 removed); and removing said second resist pattern (20 removed).

Claim Rejections - 35 USC § 103

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3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 3 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Larson (US 5,160,579) in view of Shipley (US 4,902,610).

Larson fails to disclose forming a dielectric layer on said insulating substrate and on said plating layer and said lines on said metal foil; forming an opening in said plating layer; and performing plating on said opening.

Shipley discloses forming a dielectric layer (3) on a substrate (2) and on said lines (1); forming an opening (openings above 1 in Fig. 2) in said dielectric layer on the land; and performing plating on said opening (6).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Larson by forming a dielectric layer on said insulating substrate and on said plating layer and said lines on said metal foil; forming an opening in said plating layer; and performing plating on said opening to the Larson's PCB, as taught by Shipley, for the purpose of electrically communicating the inner circuits to the exterior circuits.

5. Claims 2 and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Larson (US 5,160,579) in view of Tamm et al (US 5,666,722).

Larson fails to disclose polishing a surface of said plating layer.

Tamm discloses polishing a surface of said plating layer (Fig. 2f).

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It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Larson by polishing a surface of said plating layer to the Larson's PCB, as taught by Tamm, for the purpose of meeting the electrical requirements of the final circuit.

6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Larson (US 5,160,579)/Tamm et al (US 5,666,722) as applied to claims 1-2 above, and further in view of Shipley (US 4,902,610).

Larson/Tamm fail to disclose forming a dielectric layer on said insulating substrate and on said plating layer and said lines on said metal foil; forming an opening in said plating layer; and performing plating on said opening.

Shipley discloses forming a dielectric layer (3) on a substrate (2) and on said lines (1); forming an opening (openings above 1 in Fig. 2) in said dielectric layer on the land; and performing plating on said opening (6).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Larson/Tamm by forming a dielectric layer on said insulating substrate and on said plating layer and said lines on said metal foil; forming an opening in said plating layer; and performing plating on said opening to the Larson/Tamm's PCB, as taught by Shipley, for the purpose of electrically communicating the inner circuits to the exterior circuits.

7. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Larson (US 5,160,579)/Shipley (US 4,902,610) as applied to claims 5 and 7 above, and further in view of Tamm et al (US 5,666,722).

Larson/Shipley fail to disclose polishing a surface of said plating layer.

Tamm discloses polishing a surface of said plating layer (Fig. 2f).

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It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Larson/Shipleby by polishing a surface of said plating layer to the Larson/Shipleby's PCB, as taught by Tamm, for the purpose of meeting the electrical requirements of the final circuit.

8. Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Larson (US 5,160,579)/Tamm et al (US 5,666,722) as applied to claims 5-6, 8-9 above, and further in view of Asai et al (US 6,828,510).

Larson/Tamm fail to disclose polishing using a belt sander.

Asai discloses polishing using a belt sander (col. 23, line 49).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Larson/Tamm by polishing using a belt sander to the Larson/Tamm's PCB, as taught by Asai, for the purpose of meeting the electrical requirements of the final circuit.

9. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Larson (US 5,160,579)/Shipleby (US 4,902,610)/Tamm et al (US 5,666,722) as applied to claims 5-7, 10 above, and further in view of Asai et al (US 6,828,510).

Larson/Shipleby/Tamm fail to disclose polishing using a belt sander.

Asai discloses polishing using a belt sander (col. 23, line 49).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Larson/Shipleby/Tamm by polishing using a belt sander to the Larson/Shipleby/Tamm's PCB, as taught by Asai, for the purpose of meeting the electrical requirements of the final circuit.

Response to Arguments

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10. Applicant's arguments filed 6/16/08 have been fully considered but they are not persuasive.

Larson discloses preparing an insulating substrate (double sided printed circuit boards as well as multilayer PCBs (col. 3, lines 44-48)) having a layer of metal foil formed on each of a front surface and a back surface of the substrate (12; double sided printed circuit boards as well as multilayer PCBs (col. 3, lines 44-48)), and forming a plating layer (18) on an inner surface of said opening and areas of said metal foil not covered by said first resist pattern; adjusting a thickness of said plating layer on said metal foil (col. 4, line 52); and forming areas of said metal foil not covered by said plating layer into lines, said metal foil having at least one area covered by said plating layer (Fig. 1J). As shown in Fig. 1J, the sides of 12 and 14 are not covered by 18; therefore, they form the lines.

Interviews After Final

11. Applicant note that an interview after a final rejection must be submitted briefly in writing the intended purpose and content of the interview (the agenda of the interview must be in writing). Upon review of the agenda, the Examiner may grant the interview if the examiner is convinced that disposal or clarification for appeal may be accomplished with only nominal further consideration. Interviews merely to restate arguments of record or to discuss new limitations will be denied. See MPEP 714.13 and 713.09.

Conclusion

12. Please provide reference numerals (either in parentheses next to the claimed limitation or in a table format with one column listing the claimed limitation and another column listing corresponding reference numerals in the remark section of the response to the Office Action) to

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all the claimed limitations as well as support in the disclosure for better clarity (optional).

Applicants are duly reminded that a full and proper response to this Office Action that includes any amendment to the claims and specification of the application as originally filed requires that the applicant point out the support for any amendment made to the disclosure, including the claims. See 37 CFR 1.111 and MPEP 2163.06.

13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rick K. Chang whose telephone number is (571) 272-4564. The examiner can normally be reached on 5:30 AM to 1:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David P. Bryant can be reached on (571) 272-4526. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Rick K. Chang/
Primary Examiner, A.U. 3726

RC
October 4, 2008